

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 04 July 2000 (04.07.00)	
International application No. PCT/US99/24800	Applicant's or agent's file reference AMERICAN P-3
International filing date (day/month/year) 22 October 1999 (22.10.99)	Priority date (day/month/year) 23 October 1998 (23.10.98)
Applicant MALSON, William, S. et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

19 May 2000 (19.05.00)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

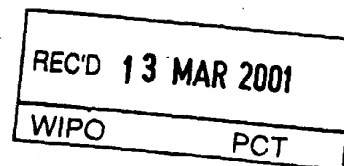
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Manu Berrod
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference AMERICAN P-3	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US99/24800	International filing date (day/month/year) 22 OCTOBER 1999	Priority date (day/month/year) 23 OCTOBER 1998
International Patent Classification (IPC) or national classification and IPC Please See Supplemental Sheet.		
Applicant MALSON, WILLIAM S.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>5</u> sheets. <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of <u>3</u> sheets.
3. This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step or industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input checked="" type="checkbox"/> Certain defects in the international application VIII <input checked="" type="checkbox"/> Certain observations on the international application

Date of submission of the demand 19 MAY 2000	Date of completion of this report 14 FEBRUARY 2001
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer VIRGINIA MANOHARAN Telephone No. 703-308-0651

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/24800

I. Basis of the report

1. With regard to the elements of the international application:*

☐ the international application as originally filed☒ the description:

pages (See Attached)

, as originally filed

pages , filed with the demand

pages , filed with the letter of

☒ the claims:

pages (See Attached)

, as originally filed

pages , as amended (together with any statement) under Article 19

pages , filed with the demand

pages , filed with the letter of

☒ the drawings:

pages (See Attached)

, as originally filed

pages , filed with the demand

pages , filed with the letter of

☒ the sequence listing part of the description:

pages (See Attached)

, as originally filed

pages , filed with the demand

pages , filed with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).☐ the language of publication of the international application (under Rule 48.3(b)).☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in printed form.☐ filed together with the international application in computer readable form.☐ furnished subsequently to this Authority in written form.☐ furnished subsequently to this Authority in computer readable form.☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. ☒ The amendments have resulted in the cancellation of:☒ the description, pages NONE☒ the claims, Nos. NONE☒ the drawings, sheets/fig. NONE5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

**Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/24800

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. statement**

Novelty (N)	Claims <u>1-16</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-16</u>	NO
Industrial Applicability (IA)	Claims <u>1-16</u>	YES
	Claims <u>NONE</u>	NO

2. citations and explanations (Rule 70.7)

Claims 1-16 lack an inventive step under PCT Article 33(3) as being obvious over SOLEAU, JR., in view of STOKES. SOLEAU, JR., describes in col. 2, lines 1-7, an apparatus comprising in combination of a water vapor retaining container, a condenser and a collection trough, as claimed. To include a dehumidification system in the apparatus of SOLEAU, JR., would not involve an inventive step since STOKES teaches, in the abstract, that it is well-known to remove condensed water from a dehumidification system in conjunction with solar and condenser devices. The claimed specific dimensions of the elongated water vapor retaining container in claims 1 and 13 is deemed to be a matter of design choice which ordinarily is within the purview of one skilled in the art.

Claims 1-16 have novelty under PCT Article (2) because none of the references of record teach the specific structural elements of the claimed water dehumidification and condensation system.

Claims 1-16 have industrial applicability under PCT Article 33(4) because the subject matter claimed can be made in industry.

----- NEW CITATIONS -----

US 4,490,926 A (STOKES) 01 JANUARY 1985, see the abstract.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/24800

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

The description is objected to as containing the following defect(s) under PCT Rule 66.2(a)(iii) in the form or contents thereof:
(a). The specification fails to provide proper antecedent basis for the claimed "...6 inches in height, and from about one(1) foot to about 20 acres in width and from about two feet to about 20 acres in length..", recited in claims 1 and 13.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/24800

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/24800

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

CLASSIFICATION:

The International Patent Classification (IPC) and/or the National classification are as listed below:
IPC(7): B01D 3/02, 5/00; C02F 1/14. and US Cl.: 62/238.5, 529; 159/903, 913; 165/177; 202/176, 185.1, 234; 203/10, DIG.1, DIG.17.

I. BASIS OF REPORT:

This report has been drawn on the basis of the description,
page(s) 1-11, as originally filed.
page(s) NONE, filed with the demand.
and additional amendments:
NONE

This report has been drawn on the basis of the claims,
page(s) NONE, as originally filed.
page(s) NONE, as amended under Article 19.
page(s) NONE, filed with the demand.
and additional amendments:
Pages 12-14, filed with the letter of 20 November 2000.

This report has been drawn on the basis of the drawings,
page(s) 1-4, as originally filed.
page(s) NONE, filed with the demand.
and additional amendments:
NONE

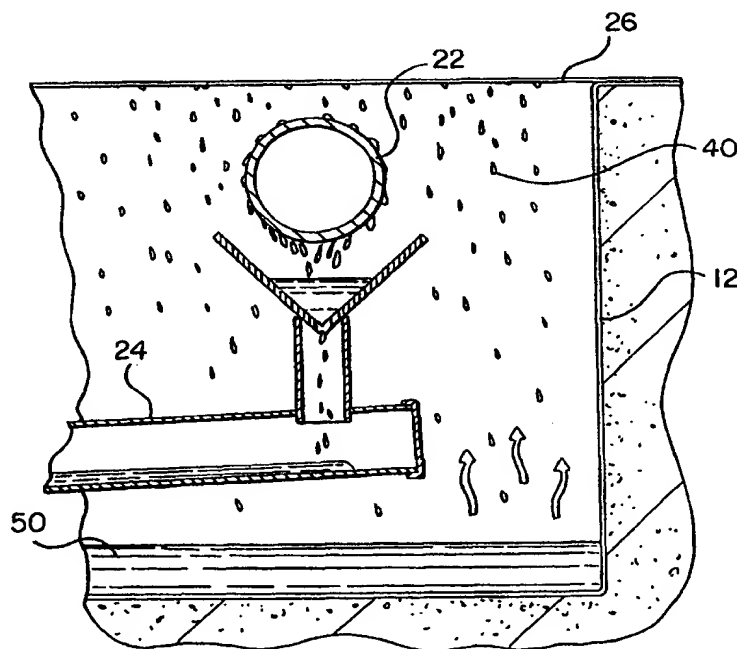
This report has been drawn on the basis of the sequence listing part of the description:
page(s) NONE, as originally filed.
pages(s) NONE, filed with the demand.
and additional amendments:
NONE



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : B01D 3/02, 5/00, C02F 1/14	A1	(11) International Publication Number: WO 00/24487 (43) International Publication Date: 4 May 2000 (04.05.00)
(21) International Application Number: PCT/US99/24800 (22) International Filing Date: 22 October 1999 (22.10.99) (30) Priority Data: 60/105,500 23 October 1998 (23.10.98) US (71)(72) Applicants and Inventors: MALSON, William, S. [US/US]; 17910 Greenfield, Clinton Township, MI 48038 (US). ROSBERG, Louis [US/US]; 27406 Selkirk, South- field, MI 48076 (US). (74) Agent: CARGILL, Lynn, E.; Cargill & Associates, 56 Macomb Place, Mt. Clemens, MI 48043 (US).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the</i> <i>claims and to be republished in the event of the receipt of</i> <i>amendments.</i>

(54) Title: WATER CONDENSATION SYSTEM



(57) Abstract

A water condensation system including a water vapor retaining container (12), a condenser (22), located within the water vapor retaining container for containing a liquid at a lower temperature than the water vapor and a collection trough (23) under the condenser for gravitationally collecting the condensate which has sweated off the condenser. The greatest application is to remove water from the air in semi-arid to humid environments, such as a large dehumidifier, removing pure water directly from the air.

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DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

INTERNATIONAL SEARCH REPORT

 International application No.
PCT/US99/24800
A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : B01D 3/02, 5/00; C02F 1/14.

US CL : Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 62/238.5, 529; 159/903, 913, DIG. 15; 165/177; 202/176, 185.1, 202, 234, 267.1; 203/10, 86, DIG.1, DIG.17.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,344,824 A (SOLEAU, JR.) 17 August 1982, col. 2, lines 1-7.	1-5, 14
Y	DE 3,918,427 A (HARTEL) 13 December 1990, abstract.	1-16
Y	US 4,756,802 A (FINNEY) 12 July 1988, col. 3, lines 5-30.	1-16
A	US 4,235,679 A (SWAIDAN) 25 November 1980, col. 1, lines 46-59.	1-16
A	US 4,217,881 A (BRENT) 19 August 1980, col. 5, lines 7-19.	1-16
A	US 4,495,034 A (LUCAS) 22 January 1985, col.3, lines 21-51.	1-16



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*G* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

22 FEBRUARY 2000

Date of mailing of the international search report

06 MAR 2000

 Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

VIRGINIA MANOHARAN

Telephone No. 703-308-0651

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/24800

A. CLASSIFICATION OF SUBJECT MATTER:
US CL :

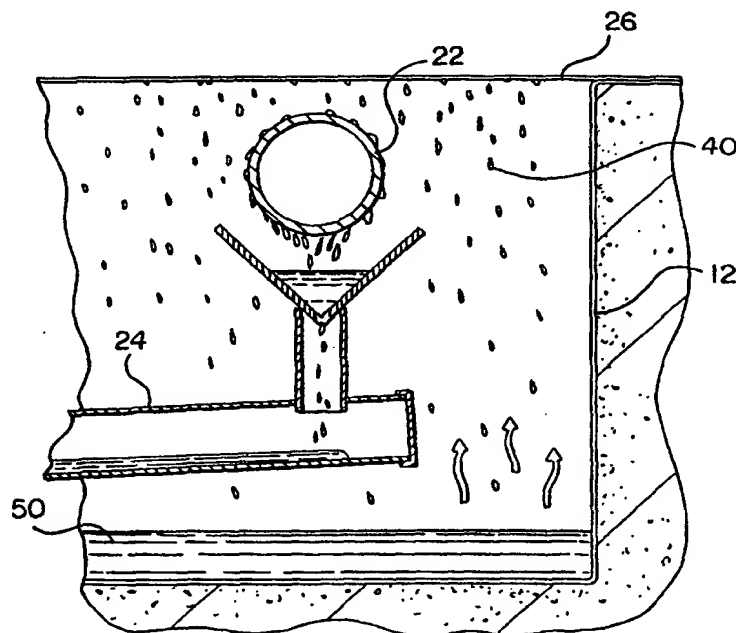
62/238.5, 529; 159/903, 913; 165/177; 202/176, 185.1, 234; 203/10, DIG.1, DIG.17.



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: WATER CONDENSATION SYSTEM



(57) Abstract

A water condensation system including a water vapor retaining container (12), a condenser (22), located within the water vapor retaining container for containing a liquid at a lower temperature than the water vapor and a collection trough (23) under the condenser for gravitationally collecting the condensate which has sweated off the condenser. The greatest application is to remove water from the air in semi-arid to humid environments, such as a large dehumidifier, removing pure water directly from the air.

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AMENDED CLAIMS

[received by the International Bureau on 5 May 2000 (05.05.00);
original claim 1 amended; remaining claims unchanged (3 pages)]

- 5 1. A water dehumidification and condensation system, comprising:
 a water vapor retaining container adapted to be heated in order to
 increase the humidity therein to a point which is as close to water vapor saturation
 as possible;
 a condenser located within the water vapor retaining container for
10 containing a liquid at a lower temperature than the water vapor, such that
 condensate forms on the outside of the condenser when water vapor is present
 and lower temperature liquid is in the condenser; and
 a collection trough under the condenser for gravitationally collecting
 the condensate which has sweated off the condenser thereby effecting
15 dehumidification of the system.
2. The water condensation system of claim 1, wherein the water vapor
 retaining container is a passive solar system.
- 20 3. The water condensation system of claim 1, wherein the water vapor
 retaining container is airtight.
4. The water condensation system of claim 1, wherein the condenser is made
 of pipe.
- 25 5. The water condensation system of claim 4, wherein the condenser is made
 of a closed loop system of pipes.
6. The water condensation system of claim 4, wherein the condenser is made
30 of a pipe material selected from the group consisting of copper and aluminum.

7. The water condensation system of claim 1, wherein the condenser is longitudinally oriented within an elongated water vapor retaining container.
8. The water condensation system of claim 1, wherein the container is an elongated container having dimensions of from about 6 inches to about 18 inches in height, and from about one (1) foot to about 20 acres in width and from about two feet to about 20 acres in length.
9. The water condensation system of claim 1, wherein the condenser carries a liquid selected from the group consisting of water, fresh water, salt water, refrigerant, and supercooled gases.
10. The water condensation system of claim 1, wherein the liquid in the condenser is at a temperature of less than about 45°F.
11. The water condensation system of claim 1, wherein the liquid in the container is at a temperature of greater than about 100°F.
12. The water condensation system of claim 1, wherein the collection trough is of a V-shaped configuration.
13. The water condensation system of claim 1, wherein the condensate being collected is water having less than about 500 ppm impurities.
14. A passive solar water condensation system for processing non-potable water into potable water by condensing purified water from contaminated water sources, comprising:
an elongated passive solar water vapor retaining dehumidification container to contain the non-potable water to be separated into potable water and residual sediment, said non-potable water to be put into a vapor phase by heating with solar energy;
at least one condenser pipe located within the water vapor retaining dehumidification container for receiving an incoming cold liquid at a lower

temperature than the water vapor, such that condensate forms on the outside of the condenser when water vapor is present and lower temperature liquid is in the condenser; and

- 5 a collection trough under the condenser for gravitationally collecting the condensate which has sweated off the condenser, forming purified water.

15. The condensation system of claim 14, further comprising a pre-treatment pond for pre-cleaning the non-potable water which is received by the humidification container to aid in the process of evaporation into the water vapor phase.

10

16. The condensation system of claim 14, further comprising a storage tank for storing the purified water collected from the dehumidification process.

"Statement Under Article 19(1)"

The amendments made to Claim 1 have been made to further clarify the claimed invention as a dehumidifying device, as opposed to a distillation system or still. The temperature in the present invention does not rise above approximately 160°F, while the temperature in distillation systems and stills must go over the boiling point of water, i.e. 212°F in order to work. Dehumidification, as in the present invention, begins at approximately 65°F and becomes increasingly efficient when the temperature reaches into the lower 100's degrees Fahrenheit. Therefore, by restricting the claims to a dehumidification system, the claims should be rendered patentable over the prior art.